

CLAIMS

What is claimed is:

1. A PIN device comprising:
a wafer portion;
electrical circuitry disposed on a first surface of the wafer portion; and
a bonding portion disposed on a second surface of the wafer portion,
wherein the wafer portion and the bonding portion are portions of a substrate,
the substrate formed by impregnating an oxide material and the bonding portion
between the wafer portion and a handle portion of the substrate, and the entire handle
portion and the oxide material being removed to expose at least part of the bonding
portion.
2. The device as claimed in Claim 1, wherein the thickness of the wafer portion
is a function of a minimum thickness of the apparatus.
3. The device as claimed in Claim 2, wherein the thickness of the wafer portion
is approximately between 5 and 200 microns.
4. The device as claimed in Claim 1, wherein the thickness of the bonding
portion is approximately between 0.1 and 50 microns.
5. The device as claimed in Claim 1, wherein the bonding portion and the handle
portion have a combined thickness greater than approximately 0.6 microns.
6. The device as claimed in Claim 1, wherein the electrical circuitry includes PIN
diodes formed in the wafer portion.
7. The device as claimed in Claim 1, wherein the oxide material and the handle
portion are removed when disposition of the electrical circuitry on the first surface of
the wafer portion is substantially complete.
8. The device as claimed in Claim 1, wherein the handle portion is removed prior
to removal of the oxide material.

9. The device as claimed in Claim 1, wherein the handle portion is removed by a first etching process.
10. The device as claimed in Claim 9, wherein the oxide material portion is removed by a second etching process.
11. The device as claimed in Claim 1, wherein the handle portion is removed as a function of the location of the oxide material.
12. The device as claimed in Claim 1, wherein the oxide material is removed as a function of the location of the bonding portion.
13. The device as claimed in Claim 1, wherein the handle portion is removed in a single process step.
14. A method for fabricating a PIN device comprising:
 - forming electrical circuitry on a wafer portion of a substrate, the substrate having a handle portion, an oxide material portion, a bonding material portion and the wafer portion;
 - removing the entire handle portion; and
 - removing the oxide material portion thereby exposing at least a part of the bonding material portion.
15. The method as claimed in Claim 14, wherein the forming step further comprises:
 - depositing a second layer of oxidation material onto a first surface of the wafer portion; and
 - depositing photoresist material onto the second layer of oxidation material.
16. The method as claimed in Claim 15, wherein the forming step further comprises:
 - depositing bump formation material on the photoresist material.

17. The method as claimed in Claim 14, wherein the forming step further comprises:
forming diode areas in the wafer portion.
18. The method as claimed in Claim 14, further comprising:
removing the handle portion by a first etching process.
19. The method as claimed in Claim 18, further comprising:
removing the oxide material portion by a second etching process.
20. The method as claimed in Claim 14, further comprising:
removing the handle portion as a function of the location of the oxide material.
21. The method as claimed in Claim 14, further comprising:
removing the oxide material as a function of the location of the bonding portion.
22. The method as claimed in Claim 14, wherein the entire handle portion is removed in a single process step.